

Hardik Kalra
Central Campus High School
Des Moines, IA
India, Factor 8: Spoilage & Waste

Solution for Wastage and Spoilage, and Sustainable Agriculture in India

Separated from the rest of Asia by the supreme wall of the Himalayas, the Indian subcontinent touches three large bodies of water and is immediately recognizable on any world map. This triangular peninsula defines the Bay of Bengal to the east, the Arabian Sea to the west, and the India Ocean to the south. Because of India's size, its climate depends not only on the time of year, but also the location within. In general, temperatures tend to be cooler in the north, especially between September and March, whereas the south is coolest between November to January. In June, winds and warm surface currents begin to move northwards and westwards, heading out of the Indian Ocean and into the Arabian Gulf. This is known as the south-west monsoon, and it brings heavy rains to the west coast. Between October and December, a similar climatic pattern called the north-east monsoon appears in the Bay of Bengal, bringing rains to the east coast. In addition to the two monsoons, there are two other seasons, spring and autumn. Climate is just one of the issues that needs to be considered when addressing India's agricultural issues.

Located in South Asia, India is a vast country with a diverse terrain from the Himalayan Mountains to the Indian Ocean. The population in India is nearly one billion and two hundred fifty million. (World Bank) The population of agricultural laborers and cultivators is nearly two hundred and thirty-six million, but the population of the undernourished or hungry is nearly one hundred and ninety million. Over the years, the population of India continues to rise but so does the number of people dying of starvation. An average family size in India is around four to five. Nearly forty-seven percent of the children lack the sufficient amount of nutrition. Education in India is provided by the public sector as well as the private sector, with control and funding coming from three levels: central, state, and local. Under various articles of the Constitution, free and compulsory education is provided as a fundamental right to children between the ages of six and fourteen. Most health expenses in India are paid out of pocket, even though there are some health insurance companies, but they only cover such a small amount, that it requires most of the payment to be made out of pocket.

An average size farm in India is about 1.33 ha. Crops that are grown on a farm are wheat, millets, rice, maize, pulses, sugarcane, groundnut, tea, coffee, rubber, cotton, and jute. These are the major crops in India and are most commonly used throughout the country. Animals raised in India include but are not limited to Cattle, Chickens, Water Buffalos, Sheep, and Goats. These are some of the animals raised on a typical farm in India, but not all of them are used for meat. For example Cattle or cow is a sacred animal in India, therefore, it is used for pulling carts/wagons and plowing the fields. There are 3 major agricultural practices in India Subsistence farming, Plantation agriculture, and Shifting agriculture. Subsistence farming is what majority of the farmers use in most parts of the country. In this practice, farmers cultivate small and scattered holdings with the help of the draught animals and family members. Tools and techniques are simple; the use of modern machinery is practically absent. Plantation agriculture was introduced in India by the British in the 19th century. This type of agriculture involves growing and processing of a single cash crop purely meant for sale. Large capital input, vast estates, managerial ability, technical know-how, sophisticated farm machinery, fertilizers, good transport facilities, and a factory for processing the produce are some of the outstanding features of plantation agriculture. Shifting agriculture is a type of agriculture in which a piece of forest land is cleared mainly by tribal people by felling and burning of trees and crops are grown. After 2-3 years when the fertility of the soil in the cleared land decreases, it is abandoned and the tribe shifts to some other piece of land. This is a very crude and primitive method of cultivation which results in large-scale deforestation and soil erosion especially on

the hillsides causing devastating floods in the plains below. About one million hectares of land is degraded every year due to shifting agriculture. The majority of the barriers to improving agricultural productivity would be the agricultural techniques that are being practiced in India, involuntary government, farmers and companies. Some barriers that might make it difficult for the government to take part in addressing food spoilage and wastage would be expenses first of all, opposition because a majority of voters are farmers, and/or farmers not complying with the reform. These barriers can easily be taken care of because the government can show farmers projected profits and results if they agree to go by the plan that is devised to decrease spoilage. Ordinary citizens can also help by purchasing food from local farmers to provide them with profits so they can pay for the improvements that the government has set out.

The factor that needs to be reformed majorly is agriculture sustainability and reduction of spoilage and wastage. This factor causes the family not to produce sufficient amounts of food due to the lack of certified seeds, misuse of irrigation, overdependence on certain crops, and excessive amounts of wastage and spoilage. As of now it is difficult for a farmer to come by the expenses to grow crops and for his family because it costs more for a farmer to grow crops than the amount they earn from selling it. However, because farmers own a farm they are able to provide a healthy diet to their family. This situation is extremely severe because nearly fifteen percent of the population is undernourished leading to death by starvation or human trafficking. The environment is in no help either, because of many farmers applying the shifting agriculture method of farming which is degrading the environment and leading to deforestation or soil erosion. This factor is worsening as time goes on because the more food that is being spoiled the more it is affecting the economy and the lives of people who are striving for food but rarely have the opportunity to afford or consume any. If the farmers cannot produce enough food due to the lack of certified seeds, which would cost them time and money, it would be an increase in price and the inability for the poor to afford food and leading to starvation. Another aspect that is worsening this factor is the lack of food storages. Since there are not as many food storages farmers have to send their food out into the market as soon as possible so that it can have a long shelf or market life. However, farmers are not able to send all of the food to the market and leads to the spoilage. This factor is measured in the amount of productivity of grain or food in tonnes (metric tons). In the year 2010-2011, the amount of grain that was produced was nearly 241 million tonnes. The productivity had gotten better to nearly 265 million tonnes but later dropped to 257 million tonnes in 2014. The situation of the farms are not changing and may potentially worsen. If this factor was to be resolved or improved it would increase the amount of production, the amount of income a farmer gets, and decrease the amount of starvation. By improving or changing the ways of agricultural methods, the environment can also be preserved and provide for generations without harming more land than needed. The solution to this factor would also bring a major increase in the economy and reduction to poverty because farmers will earn more income resulting in an increase in economy and since the majority of the population that is in poverty is farmers it will result in a reduction of poverty. The improvement of this factor would also help smallholder farmers because it will bring them business, lower their expenses by having storages and stock as well. On the contrary, there are some cons the storages and improvement of agricultural methods may provide with more productivity and income but environmental issues such as water scarcity can still have a major effect. Due to the lack of proper irrigation systems, farmers tend to overuse the amount of water needed resulting in either water scarcity for the rest of the year or may lead to the death of plants.

The policies, technologies, practices and/or investments that are recommended to help with this situation would include working with the government, farmers, and a company that can provide supplies or the essential things needed to improve the situation. The three have to work together to create a policy or a plan for how it is going to be done and what each one has to do in order for it to succeed. The technologies that would be included in the policy would be building irrigation systems and warehouses. The irrigation systems would decrease the overuse of water for crops and lengthen it so that they would have enough for the whole year. The warehouses would allow the farmers to store food so that it has a

longer life and it can eventually reach the market and reach the people in need of food. This would solve most of the wastage and spoilage because the storages would prevent the food from spoiling and allow enough time to reach consumers. Also, using advanced technologies is an appropriate solution because it would increase food production which would help the starving people and possibly increase GDP of the nation. However, building these new technologies would not help or make a plausible difference unless farmers change their agricultural practices, and to do that certified companies, such as DuPont Pioneer, for example, would need to help by suggesting the right seed and what should be done in order to produce sufficient amount of food. The companies would have to invest quite a bit of money into providing farmers with actual or quality certified seeds and keeping the soil in a good shape by using seeds that restore minerals in the soil. The government could invest money into building storages and proper irrigation systems. These new techniques need not be carried out in the whole country right away but will start in a region where there is the major production of food. Likewise, the storages would not be built in every region or for every farmer, they would be built in an area which is easy for farmers to store their food and for companies or marketers can come and purchase food from all of the farmers giving business to all. The local government would enforce and collect payments from farmers so that it can be used to keep the storages running and provide more facilities to farmers. The government could also, if wanted, communicate with companies and provide farmers with the latest technologies to help them produce more and faster. This would help farmers by changing their agricultural practices and becoming more modern as the population is increasing. The farmers would have to change their agricultural practices and keep the proper use of the new technologies/ equipment. These actions would increase the productivity, spoilage, and have the sufficient amount of food for the whole country. It would also result in an increase of income for farmers and economy. With the money farmers earn they can pay a certain amount monthly to the government and companies to eventually pay back the investment. Small scale farmers would also be able to afford these services as it would increase yield and decrease the risk of wastage and spoilage, with that being this would allow them to increase their profits and afford certified seeds and storage space

India is a strong country internally and has fought through challenges over the years, but if the country should ever go into a depression then the agriculture sector would suddenly seem like a weight they cannot carry. If action is not taken then the agriculture sector would seem a liability more than an asset. If action is not taken, farmers will continue to practice their methods of farming, which are harmful to the environment, use extended amounts of resources such as water, and decrease the population of farmers because of high suicidal rates. The solution would reduce the number of suicidal deaths of farmers due to lack of income to raise their family and human trafficking. It would also lower the unemployment rate as well as feed the undernourished and people who do not have the sufficient amount of nutrition.

Works Cited

- "Countries and Economies." Countries. World Bank, n.d. Web. 29 Mar. 2016.
- "Economic Survey 2015: Growth in Agriculture Remains a Worry, Says Ashok Gulati." Timesofindia-economictimes. N.p., n.d. Web. 28 Mar. 2016.
- "India Wastes Rs 44,000 Cr worth Food Every Year." Deccan Herald. N.p., n.d. Web. 21 Feb. 2016.
- "Infochange India." Inequality in India: Income, Access to Healthcare and Education for the Poor. N.p., n.d. Web. 21 Feb. 2016.
- What Are the 40 Major Problems India Is Facing Today and Why?" - Quora. N.p., n.d. Web. 21 Feb. 2016.
- "Production of Total Foodgrains in India." Production of Total Foodgrains in India. N.p., n.d. Web. 28 Mar. 2016.
- "India's Shocking Farmer Suicide Epidemic." - Al Jazeera English. N.p., n.d. Web. 29 Mar. 2016. <https://sites.google.com/site/indianfarmersthenandnow/current-situation>.